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28. (amended) The method of claim 27, wherein the encoded protein having an enhanced Rubisco carboxylation activity has a higher carboxylation specificity factor than proteins encoded by the plurality of polynucleotide species.

29. (amended) The method of claim 27, wherein the encoded protein having an enhanced Rubisco carboxylation activity has a velocity of carboxylation that is greater than that of proteins encoded by the plurality of polynucleotide species.

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30. (amended) The method of claim 27, wherein the encoded protein having an enhanced Rubisco carboxylation activity has a velocity of oxygenation that is less than that of proteins encoded by the plurality of polynucleotide species.

31. (amended) The method of claim 27, wherein the encoded protein having an enhanced Rubisco carboxylation activity has a Km for CO₂ that is less than that of proteins encoded by the plurality of polynucleotide species.

32. (amended) The method of claim 27, wherein the encoded protein having an enhanced Rubisco carboxylation activity has a Km for O₂ that is greater than that of proteins encoded by the plurality of polynucleotide species.

33. (amended) The method of claim 27, wherein the plurality of parental polynucleotide species encodes at least one Rubisco Form I L subunit.

34. (amended) The method of claim 27, wherein the plurality of parental polynucleotide species encodes at least one Rubisco Form I S subunit.

35. (amended) The method of claim 27, wherein the plurality of parental polynucleotide species encodes at least one Rubisco Form II subunit.

36. (amended) The method of claim 27 further comprising a selectable marker gene which affords a means of selection when expressed in chloroplasts.

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37. (amended) The method of claim 36, wherein the sequence encoding a protein having Rubisco carboxylation activity and the selectable marker gene are flanked by an upstream flanking recombinogenic sequence having sufficient sequence identity to a chloroplast genome sequence to mediate efficient recombination and a downstream flanking recombinogenic sequence having sufficient sequence identity to a chloroplast genome sequence to mediate efficient recombination.